

Extent of Linkage among Scientists, Extension Personnel and Fish Farmers in Tripura, India

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ABSTRACT

The present study was conducted during 2014-2015 in eight different districts of Tripura to highlight the existing linkage among researchers, extension personnel and fish farmers of the state. 28 Extension personnel including Fishery Officers from Department of Fisheries and Subject Matter Specialists from Krishi Vigyan Kendras; 30 Researchers from ICAR, CAU and Tripura University and 120 farmers were randomly selected from different districts of the state and were interviewed for the said study. The study revealed that both the researchers and the extension personnel maintain linkage with the farmers mostly through group contact methods such as trainings, demonstrations and field visits. Majority of the researchers (93.33 %) maintained linkage with farmers through group meetings followed by Training programmes (90%), Demonstration (80%), Field Visits (73.33%), Field Trials (66.67 %) and Workshop (60%). 89.28 per cent of the extension personnel contacted the farmers through trainings, 53.57 per cent contacted through field visits and another 42.86 per cent interacted with farmers through demonstrations. Majority of the extension personnel (96.42%) maintained linkage with the researchers through training programmes followed by group meetings (92.86%), workshops (85.71%) and seminars/symposiums (64.28%). It was observed that experience of researchers with farmers showed positive and significant correlation with use of radio and home visits; experience of extension personnel with researchers showed positive and significant correlation with use of telephone and home visits; and experience of extension personnel with famers showed positive and significant correlation with use of radio and television.

Key words: Linkage; Researchers; Extension personnel; Fish farmers;

Tripura is a north eastern hilly state of India bordered by Assam and Mizoram to the east and Bangladesh to the north, south, and west. The state comprises of eight districts viz., Dhalai, Khowai, Shipahijala, Gomati, Unakoti, North Tripura, South Tripura and West Tripura. Being blessed with 0.18 lakh ha of inland water resources, Tripura achieved a total fish production of 53,340 tonnes in 2011-12 (Anon, 2013). Fishery plays a very important role in the state not only for food but also for improvement of the socio-economic condition of about 68 per cent of the rural people who are living below the poverty line. Fish is one of the most important daily diets of 95 per cent of its population with its annual per capita consumption being

the highest amongst the inland states of the country. Tripura needs judicious exploitation of its resources so as to mitigate the problem of demand and supply of quality food particularly the availability of adequate fish.

The fisheries in Tripura is facilitated by a network of institutes comprising of the Department of Fisheries, Government of Tripura and its units at different districts of the state; the Indian Council of Agricultural Research Complex for NEH Region, Tripura Centre; the Krishi Vigyan Kendras (KVKs); the College of Fisheries, CAU; Fish Farmers Development Agencies (FFDAs); Self Help Groups (SHGs) and Non Governmental Organizations (NGOs); and fish farmers and entrepreneurs. An analysis of the linkage among the

researchers, fisheries experts, extension personnel and fish farmers is indispensable to study and understand the gap among them and bring forward a better and sustainable fisheries management. According to *Godara et al (2006)*, the agricultural universities consider extension activities as an important function besides, teaching and research activities. Linkage mechanism refers to the mutual and reciprocal connection between research, extension and farmers. Linkage among research – extension – farmer can be considered as a precursor for undertaking and implementing any extension programme at field level effectively. *Kumar et al. (2001)* cited that a number of studies on research, extension and farmer's interaction have been undertaken since the 1960s but these studies remained confined on communication behaviour of researchers, extension personnel and farmers. In the later eighties, studies showed the influence of mass media on the farmers as a source of information. There was a considerable gap between the desired interaction and the actual interaction between research and extension personnel. A top down approach of extension and farmer's interaction was observed. *Angbamu (2000)* revealed that Japan's research-extension linkage system offers a range of opportunities for farmers' participation in joint decision-making on research themes at the prefecture level which made the linkage system even stronger. However, during the study, it was reported that farmers were not involved in decision making on research themes. There was no report of any workshop involving all the researchers, extension personnel and farmers.

Angbamu (1998) opined that effective links between extension and farmers will allow the farmers to enhance their output through the availability of farming innovations. *Altaye (2012)* cited the importance of a responsible body that can manage linkages that fosters successful research-extension-farmers' linkages with well formulated, properly defined, and institutionalized linkage strategies and mechanism. It is imminent that research-extension linkages ought to be studied so that certain implications can be drawn for better research extension linkages. It is in this context that the present study was taken up with the following objectives:

- i. To study the linkage mechanism among researchers, extension personnel and fish farmers of Tripura
- ii. To suggest recommendations for better research-extension and farmers linkage

METHODOLOGY

The study was conducted in the eight different districts of Tripura viz., Dhalai, Khowai, Shipahijala, Gomati, Unakoti, North Tripura, South Tripura and West Tripura. All the researchers of ICAR, CAU and Tripura University who are associated with different fisheries related research activities were contacted. Thus, 30 such researchers constituted the sample. Similarly, a sample of 28 extension personnel was randomly drawn from officials of State Department of Fisheries and Krishi Vigyan Kendras operating in the state. 120 farmers from different districts of the state were also interviewed for the said study. The communication channels and extension methods used by the extension personnel and researchers for interaction among the researchers, extension personnel and farmers were studied to analyse the linkage. The data were collected with the help of pre-structured interview schedule by personal interview method. The data collected was analysed using statistic tools like frequency and percentage as well as correlation.

RESULTS AND DISCUSSION

It was found that majority (40.00%) of the researchers had upto 5 years of job experience; 23.33 per cent of them had 6-10 years of work experience; 6.67 per cent of them had 11-15 years of job experience and 30 per cent of them had 16 and above years of experience. It is also revealed that the 35.71 per cent of extension personnel had 16 or more than 16 years of work experience; 25 per cent of them had 11-15 years of experience; 21.43 per cent of them had upto 5 years of experience and 17.86 per cent had 6-10 years of experience (Table 1). The percentage distribution of researchers and extension personnel, based on their work experience reflects that the more researchers belong to lower category of work experience whereas more proportion of extension personal belong to higher category of work experience.

Table 1. Distribution of researchers and extension personnel on the basis of their experience in years

Experience	Researchers (n=30)		Ext. personnel (n=28)	
	No.	%	No.	%
Upto 5 years	12	40.00	06	21.43
6-10 years	07	23.33	05	17.86
11-15 years	02	06.67	07	25.00
16 and above	09	30.00	10	35.71

Linkage maintained by Researchers with Farmers: This study revealed that the researchers mostly used Group contact methods for disseminating information to fish farmers. Among the Group contact methods, majority of the researchers (93.33 %) maintained linkage with farmers through group meetings followed by Training programmes (90%), Demonstration (80%), Field Visits (73.33%), Field Trials (66.67%) and Workshop (60%).

Among the Mass contact methods, majority (93.33 %) of the researchers used mobile phones to contact fish farmers. Only few researchers (26.6%) used radio for dissemination of information to the fish farmers and 13.33 per cent used Television as a medium for disseminating farm related information to the farmers. However, only 43.33 per cent of the researchers made home visits occasionally and only 6.67 per cent of the researchers used personal letters to contact with the fish farmers (Table 2).

Table 2. Use of different extension contact methods by researchers for linkage with farmers (N = 30)

Extension Contact methods		No.	%
Mass	Mobile	28	93.33
	Internet	3	10
	Radio	5	16.67
	Television	3	10
Group	Meetings	28	93.33
	Workshops	26	86.67
	Training	27	90
	Field trials	20	66.67
	Field visits	22	73.33
	Demonstration	24	80
Personal	Personal letters	2	6.67
	Home visits	13	43.33

Association between selected extension contact methods and year of experience of researchers with farmers: The association between selected extension contact methods and year of experience of researchers with farmers was analysed by using multiple correlation method. The obtained results are presented in the Table 3. It is observed that the years of experience of the researchers showed positive and significant correlation ($r=0.556$) with use of radio as mass contact method. This indicates that more experienced researchers were using mass media like radio as communication channel for transferring their information and skill to the fish farmers. The years of experience also showed positive

and significant association ($r=0.418$) with home visits, which revealed that more experienced researchers have better rapport with the farmers and form linkage through home visits.

Table 3. Association between selected extension contact methods and year of experience of researchers for linkage with farmers (N = 30)

Ext. Contact Methods	Independent Variables	'r' value
Mass contact	Mobile	-0.243
	Internet	-0.221
	Radio	0.556**
	Television	0.293
Group Contact	Meeting	-0.243
	Workshops	0.213
	Training	0.124
	Field Trials	0.336
	Field Visits	0.296
	Demonstrations	0.186
Individual Contact	Home Visits	0.418*
	Personal Letters	0.124

** Correlation coefficient significant at the 0.01 level.

* Correlation coefficient significant at the 0.05 level.

Linkage maintained between researchers and extension personnel: It was found that majority of the extension personnel (96.42%) maintained linkage with the researchers through training programmes followed by group meetings (92.86%), workshops (85.71%) and seminars/symposiums (64.28%). Majority of the extension personnel (96.42%) used mobile phones to contact with researchers followed by official letters (89.28%), telephones (46.43%) and internet (28.57%). The study also revealed that 67.86 per cent of the extension officers made office visits to contact the researchers but only 10.71 per cent made home visits (Table 4.).

Table 4. Use of extension contact methods between extension personnel and researchers (N=28)

Extension contact methods		No.	%
Mass	Mobile	27	96.42
	Internet	8	28.57
	Telephone	13	46.43
	Official letters	25	89.28
Group	Meetings	26	92.86
	Workshops	24	85.71
	Trainings	27	96.42
	Symposiums/seminars	18	64.28
Personal	Home visits	3	10.71
	Office visits	19	67.86

Association between selected extension contact methods and year of experience of extension personnel with researchers: The association between selected extension contact methods and year of experience of extension personnel for linkage with researchers was calculated using the Pearson's correlation method. The results are presented in Table 5. It is revealed from the table that the years of experience of the extension personnel had high positive and significant correlation coefficient ($r=0.578$) with use of telephone. Similarly, the years of experience of the extension personnel had high positive and significant correlation coefficient ($r=0.516$) with use of home visits. These results showed that extension personnel with greater experience had communication with researchers through telephone. It is also evidenced from the results that experienced extension personnel also maintain linkages with the researchers through home visits. Further it is noticed from the table that several extension contact methods were turned out with negative sign, indicating that usage of modern extension methods to communicate with researchers are more common in young extension personnel.

Table 5. Association between selected extension contact methods and year of experience of extension personnel with researchers (N = 28)

Ext. Contact Methods	Independent Variables	'r' value
Mass Contact	Mobile	-0.299
	Internet	-0.354
	Telephone	0.578**
	Official letter	0.179
Group Contact	Meeting	-0.388*
	Workshops	-0.330
	Training	-0.096
	Symposium/Seminar	0.093
Individual Contact	Home visit	0.516**
	Office Visit	0.247

** . Correlation is significant at the 0.01 level.

* . Correlation is significant at the 0.05 level.

Linkage maintained by extension personnel with farmers: The extension personnel including the fisheries officers of state department and KVK Subject Matter Specialists used different extension contact methods to develop linkage with the farmers (Table 6). Among the mass contact methods, majority of the extension personnel (96.43%) used mobile phones to communicate with the farmers, 92.86 per cent of them were also used

newspapers as a means to contact the farmers, 42.86 per cent used leaflets, 39.28 per cent contacted the farmers through exhibitions, 35.71 per cent contacted through radio and only 4.00 per cent of extension personnel utilized televisions as communication channel with the farmers. Among the group contact methods, trainings were emerged major group contact method and utilized by 89.28 % extension personnel, followed by field visits used 53.57 per cent of extension personnel and demonstrations method was used 42.86 per cent of extension personnel. The study also revealed that a majority of the extension personnel (75 %) contacted with farmers through personal visits or interviews and another 57.14 per cent made home visits to interact with farmers. These results showed that barring few contact methods such as Radio and TV, all other contact methods were used by majority of the extension personnel disseminating information and skill to the farmers.

Table 6. Use of extension contact methods by extension officers for linkage with farmers (N = 28)

Extension Contact methods	No.	%	
Mass	Radio	10	35.71
	TV	4	14.28
	Mobile	27	96.43
	Leaflets	12	42.86
	Newspapers	26	92.86
	Exhibitions	11	39.28
Group	Training	25	89.28
	Demonstrations	12	42.86
	Field visits	15	53.57
Personal	Personal interview/ meeting	21	75.00
	Home visits	16	57.14

Table 7. Association between selected extension contact methods and year of experience of extension officers for linkage with farmers (N = 28)

Ext. Contact Methods	Independent Variables	'r' value
Mass Contact	Radio	0.588**
	Television	0.406*
	Mobile	-0.299
	Leaflets	-0.067
	Newspapers	-0.284
	Exhibitions	0.232
Group Contact	Training	0.014
	Demonstration	-0.126
	Field Visits	0.009
Individual Contact	Personal Interview/Meeting	0.072
	Home Visits	0.354

** . Correlation is significant at the 0.01 level.

* . Correlation is significant at the 0.05 level.

Association between selected extension contact methods and year of experience of extension personnel with farmers: The type of association between selected extension contact methods and year of experience of extension personnel for linkage with researchers was analysed using correlation. The results are represented in Table 7. The findings revealed that the years of experience of the extension personnel with the farmers showed high positive and significant correlation coefficients with use of radio ($r=0.588$) and television ($r=0.406$). This means that more experienced extension officers transfer their information and skill to the farmers through mass media like radio and television.

CONCLUSION

It can be concluded from the study that the researchers, extension personnel and fish farmers in the Tripura state maintain linkage through workshops, trainings, seminars, etc. However, the linkage mechanism amongst the researchers, extension personnel and fish farmers need to be strengthened for the sustainable development of fisheries in the state. It was noticed from the study that the lack of adequate manpower resources and lack of experienced personnel hinder in the process of developing linkage with farmers. Further due to organizational pressure, both researchers and extension personnel could not afford to find much time to develop personal linkages between them. Absence of multi institutional research projects that

involve the State Department of Fisheries, KVKs, CAU researchers and ICAR researchers can be a reason for the inadequate research – extension linkage.

Based on the findings and observations, the following recommendations are made for better research, extension and farmer linkage:

- i. The mechanism of feedback from farmers to researchers and solution to farmers' field should be well maintained
- ii. The communication between researchers, extension personnel and farmers should be improved in a bottom up approach
- iii. There should be coordination between the fisheries institutions under the state government and central government.
- iv. Better rapport building between researchers, extension personnel and researchers is essential for a strong linkage research extension system. Although there is existence of linkage between the researchers, extension personnel and farmers to some extent, there is need of better communication and interaction to be maintained among them.
- v. Efficient linkage is essential for accelerating the fish productivity in a sustainable manner. The farmers need to be linked to extension personnel and researchers effectively so that they are motivated towards adoption of new scientific pisciculture technologies to raise their productivity and production levels.

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